The Maryland Fruit Grower

November, 1936

Maryland State
Horticultural Society

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Published Monthly by the Maryland State Horticultural Society

Edited by the Secretary, A. F. Vierheller, Extension Horticulturist

Vol. 6 **November, 1936** **No. 11**

THE CODLING MOTH PROBLEM IN MARYLAND

By C. Graham, Assistant Entomologist, University of Maryland.

It is again time for fruit growers to begin thinking about the problems they are to face in producing their 1937 fruit crop. The problem of controlling codling moth is foremost in mind, following the serious late summer damage this season. Just how serious the colding moth is going to be in 1937 remains to be seen, for the seriousness of the problem depends to a great extent on weather conditions from early spring to late fall; but many growers probably will face a hard problem.

Reviewing the situation for the past two seasons, the 1935 weather conditions throughout the codling moth season were extremely unfavorable for codling moth reproduction, consequently the infestation was at a low mark and the carry-over of worms was also light. With this small carry-over, and assuming the weather conditions in 1936 would be similar to 1935, the prospects were for a light infestation in 1936. However, the weather reversed itself and became extremely favorable for the codling moth—a long hot and dry summer, which gave the moths that escaped, in the first brood, an opportunity to breed at a maximum capacity, thus building up a second and partial third brood that resulted in a heavy loss of fruit, and in a heavy carry-over of worms for the 1937 crop.

A survey was made in 37 orchards this season in the western part of the State to determine the amount of injury from the moths. The results ranged from 0.5% to 61% with an average of 13.87% for all orchards. If these figures showed the whole picture, the moth problem would not be so serious after all, but the survey was made *only on the fruit that remained on the trees at harvest time*. If the wormy fruit that fell to the ground had been examined, the figures would be entirely different. In fact it would have shown the codling moth problem to be actually what it is, a serious matter, and a problem that the 1937 growers will have to fight.

Growers who are not prepared to wash their fruit are greatly handicapped in the fight against codling moth. The restrictions on the arsenate and lead tolerances make it necessary for growers not equipped to wash the fruit to use calcium arsenate in their third and fourth cover sprays, and the last of these sprays must be completed before July 15th. This procedure leaves several weeks for the lead and arsenate to lose its toxicity, and opens the possibility for the second and third broods of moths to build up a heavy infestation that ruins the fruit of the present crop and builds a heavy carry-over of worms for the following year, thus carrying on from year to year with a probable building up, instead of a decrease, in moth population. It therefore is imperative that the growers who are not prepared to spray later than July 15th practice the sanitation methods discussed below, in addition to carrying on a timely and thorough spray program.

Sanitation Measures

Chemically treated bands have been used in heavily infested orchards for several years, and experiments have shown that approximately 50% of the

worms that would ordinarily spin up on the trees are caught under these bands. This being true, it would mean a reduction of approximately 50% of the second brood moths, plus a 50% reduction in the carry-over of the worms.

The trees should be scraped in cold, dry weather when the bark is crisp and comes off easily. In instances where there are large numbers of worms under the bands, it might be advisable to catch the scrapings and burn them. However, this retards the progress of the scraping, making it more expensive. The treated bands should be placed around the trunks of the trees before June 15th and left there until all the worms have left the fruit and spun up in the fall, then removed and burned.

The question of screening packing houses that are located near orchards has been taken far too lightly, for these open sheds, stored full of packing boxes and baskets furnish a real menace to orchards.

In 1936 a large packing shed was made as nearly mothproof as could conveniently be done by stopping the cracks with black building paper. Six mercury arc electric insect traps were placed at different points in the shed to attract the moths. A basket was placed under each trap to catch the moths when they were electrocuted. At the end of the emergency period the moths were counted and the total from all traps was 7,500. Assuming 50% of these moths were females, and asuming each female moth laid only 100 eggs, the moths would lay 375,000 eggs. In addition to the moths caught in the traps, there is no doubt that many thousand escaped into the orchard. With these unprotected sheds, located near the orchard, is it any wonder that the infestations are heavy near the sheds and spread further and further into the orchard each year? Place all baskets, barrels, and boxes in your shed, screen them in and leave them in until July 15th.

Growers who have a *heavy* infestation of codling moth to fight and who contemplate the installation of a fruit washing machine and a heavier spraying schedule *also* should follow the sanitation measures recommended. It must be realized that it will take *two* years of such control measures to materially reduce a heavy infestation and the grower must use the best methods available.

Do not forget that you have a heavy carry-over of worms in your orchard and that, under normal weather conditions, you are going to have a fight to hold the moths at their present level, and if the weather should be similar to 1936, the problem will be more serious. Start now to get ready to band your trees. Clean up the packing houses and have your spray machines "ready to go" in the spring.

AMONG MARYLAND GROWERS

Mr. Frank Ziegler, Denton, has installed a Bean Flood Type Washer.

Mr. John H. Wilcox, Easton, has dressed up his packing house with a Wayland Flotation Washer, and sizing equipment, and has also installed stationary spray lines in the orchard.

All Maryland growers will be sorry to hear that the hurricane caused very serious damage and loss in the Harrison Nurseries Orchards, in the vicinity of Berlin. The fruit packing and nursery stock storage and packing sheds were practically demolished, and very heavy loss of a fine fruit crop was sustained. Several other growers on the Shore suffered losses of fruit, and damage to orchards.

THE VIRGINIA MEETING

Secretary W. S. Campfield of Virginia State Horticultural Society has extended a special invitation to all fruit growers in the Southern States to be present at the joint meeting of the Virginia Society and The American Pomological Society to be held at Roanoke, Virginia, December 8, 9, and 10, 1936. This is going to be a fine meeting, and well worth time and expense of attending. An attractive program has been arranged. Make plans now, to be present.

THE WINTER MEETINGS

Plans are going forward for the annual winter meeting of the Society. The meeting will be held at Hotel Alexander, Hagerstown, on January 5, 6 and 7, 1937. An interesting program is being arranged, and there will be the usual commercial and educational exhibits. The program will be mailed before Christmas. Plan now to attend.

AMERICAN FRUIT GROWER MAGAZINE

The American Fruit Grower Magazine will be sent to all paid-up grower members of the Society, according to a recent letter from the publishers.

BULLETIN REVIEW

BEVERAGES FROM RHUBARB

By W. F. Walsh and D. K. Tressler. Fruit Products Jour., May, 1936.

This article discusses the cost, method of preparation, and the desirable varieties for rhubarb juice. Of special interest to fruit growers is the discussion of rhubarb juice as a blender for most fruit juices. The authors state: "When mixed with a sweet, insipid cider in the right amount, it imparts a springhtliness and tang that makes the beverage much more satisfying to the average palate. Rhubarb juice, diluted with an equal quantity of water and sweetened with 10% cane sugar, when added to a sweet, insipid cider in the proportion of one part of rhubarb to three parts of cider, made a very attractive and pleasing beverage.

"A blend of one part of rhubarb juice with two parts of Montmorency cherry juice diluted with an equal quantity of water, with enough sugar added to bring the total solids content to 13%, made a beverage with an attractive red color and a pleasing cherry flavor, especially desirable when carbonated.

"A mixture of equal amounts of Concord grape juice and rhubarb juice with 15% of cerelose added, when diluted with an equal quantity of water and carbonated to three volumes, also made a zestful beverage. The flavor of grape juice predominated, but it was pronounced more pleasing than ordinary carbonated grape juice.

"When used as a base for fruit punch, rhubarb juice forms an economical and attractive background for the more costly citrus and berry juices.

"Very little concentration of the clarified rhubarb juice would be required to produce an attractive concentrate of great strength. A concentrate of this

kind would offer to the soft drink industry a cheap, attractive and convenient base for the making of rhubarb beverages. It could also be blended with fruit juice concentrates or syrups to make a base for making delightful fruit punches in the home."

Relative to the cost, it is estimated by the authors that rhubarb juice can be produced for less than seven cents a gallon. Considering the dilutions which are suggested and the proportions recommended, its costs as a blender is therefore almost negligible. In addition the rhubarb grower can realize from $12 to $15 per ton from the surplus available after the early season demand has been satisfied. The fact that rhubarb juice has been held in freezing storage for over two years with no adverse changes in quality further enhances its possible use as a blending material for various fruit juices and ciders.—Reviewed by Dr. I. C. Haut.

OTHER MEETINGS

Peninsula Horticultural Society, Hurlock, Maryland. December 2-3, 1936.

New Jersey State Horticultural Society, Haddon Hall, Atlantic City, N. J. December 8-10, 1936.

BULLETINS YOU MAY WANT

A post card will bring any of the bulletins listed below, free, unless otherwise stated. When writing, give number and title of bulletin. All of these bulletins may not fit our conditions, but their contents may be of interest, and may contain some ideas that can be of use.

Tree Borers and Their Control. Circ. 110. 1935. Oregon Agr. Exp. Sta., Corvallis, Ore.

Investigations in Pruning Mature Apple Trees. Bul. 624. 1935. Cornell Agr. Exp. Sta., Ithaca, N. Y.

Harvesting and Packing Apples, Peaches, and Pears. Bul. 257. 1933.

Can We Be Of Assistance?

East Central Fruit Growers Production Credit Association

Hagerstown, Maryland

Organized for benefit of Fruit Growers in their financial production operations

Cornell Agr. Extension Service, Ithaca, N. Y.

Field Mouse and Rabbit Control in New York Orchards. Bul. 338. 1935. Cornell Agr. Extension Service, Ithaca. N. Y.

Practical Sanitation for Apple Orchards. Circ. 443. 1936. Illinois Agr. Exp. Sta., Urbana, Ill.

Functional Diseases of the Apple in Storage. Bul. 329. 1935. Iowa Agr. Exp. Sta., Ames, Iowa.

Factors Influencing the Refrigeration of Packages of Apples. Bul. 410. 1934. Illinois Agr. Exp. Sta., Urbana, Ill.

Pruning Stone Fruits. Circ. 183. 1935. Missouri Agr. Exp. Sta., Columbia, Mo.

Pruning Young Fruit Trees. Leaflet 109. 1935. Massachusetts Agr. Extension Service, Amberst, Mass.

Spray Residue Removal from Apples and Other Fruits. Farmers Bul. No. 1752. 1935. U. S. Dept. of Agriculture, Washington, D. C.

Removal of Spray Residues from Apples. Bul. 318. 1935. Pennsylvania Agr. Exp. Sta., State College, Pa.

Heating Systems for Apple Washing Machines. Circ. 457, 1936. Illinois Agr. Exp. Sta., Urbana, Ill.

The Construction and Management of Air-Cooled Storages with Special Reference to Apples. Circ. Bul. 143. Michigan Agr. Exp. Sta., East Lansing, Mich.

Training and Pruning Fruit Trees. Circ. 303. 1934. West Virginia Agr. Extension Service, Morgantown, W. Va.

Ideas in Pruning, Mimeograph 14. 1936. Maryland Agr. Extension Service, College Park, Md.

Soil Management and Fertilizers for Indiana Fruit Crops. Leaflet 185. 1935. Purdue Extension Service, Lafayette, Indiana.

Heavy Mulching in Bearing Apple Orchards. Bul. 328. 1936. Massachusetts Agr. Exp. Sta., Amherst, Mass.

Spray Residues and Their Removal from Apples. Bul. 302. 1936. Virginia Agr. Exp. Sta., Blacksburg, Va.

WATER REQUIREMENTS

The Bureau of Plant Industry, U. S. Department of Agriculture, has found that the ratio of root concentration to the number of leaves, has a direct effect upon the fruitbearing of a pear tree. According to their report, a medium-sized Anjou pear tree has more than 1,000 square feet of leaf area, counting the upper surface of the leaf only. In hot weather, such a leaf area will lose about one gallon of water per hour, during the night, and as much as eight gallons an hour, during the warmer part of the day. The average evaporation loss through the leaves is estimated as about 80 gallons per day. Unless this water is replaced, through the root system, there is a water shortage in the tree, slowing up food manufacture in the leaves, which, of course, interferes with growth of tree and fruit. The earlier in the day that this shortage occurs, the more serious is the damage to the tree and fruit. Investigations in the effects of water shortage in Eastern apple orchards was reported in the June, 1936 issue of The Maryland Fruit Grower.

"Did Clarice enjoy her date with Joe, last night?"

"She was never so humiliated in her life. When he started to eat his soup, five couples got up and began dancing."

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Plan this spray now. Get the jump on the aphis for this season. Spring spraying can be done, but the Fall application is more certain, according to Experiment Station recommendation.

Prices of Straitar and Tar-o-wash are still low, but as many raw materials continue to advance, it is doubtful if they will ever be sold as cheaply for years to come. Advances may be necessary before spring.

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